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- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

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22 July 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHODS FOR PREPARING CATALYSTS

(57) Abstract: The present invention is directed to processes for preparing supported metal catalysts comprising one or more catalytically active metals applied to a porous catalyst support and to processes that use such catalysts. The process requires the formation of an organic complex during the manufacture of the catalyst which after its formation is either partially or fully decomposed before reduction of the metal to form the catalyst. The catalysts have high levels of metal dispersion and uniform distribution of catalytically active metals on the support. The catalysts obtained from the processes are particularly effective in catalysing Fischer-Tropsch reactions and as adsorbents for the removal of organosulfur compounds from hydrocarbons.

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# INTERNATIONAL SEARCH REPORT

In: ional Application No  
F... EP 03/12884

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7: B01J37/02 B01J20/30 B01J37/08 B01J20/02 C10G2/00  
C07C1/04 B01D53/02 C10G25/00 C10G29/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B01J C10G C07C B01D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, COMPENDEX, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	W0 98/47618 A (EXXON RESEARCH ENGINEERING CO) 29 October 1998 (1998-10-29) cited in the application	5-23, 28-30, 40-42, 46-60, 76,77
A	the whole document	1-4, 30-39
X	US 3 761 428 A (SUGIER ANDRÉ AND MIQUEL JEAN) 25 September 1973 (1973-09-25) the whole document	5-27,30, 46-60,76
X	US 2 889 287 A (SCOTT JR JOHN W) 2 June 1959 (1959-06-02) the whole document	5-23, 28-30, 40-42, 46-60,76
-/-		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

29 April 2004

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10. 05. 2004

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## INTERNATIONAL SEARCH REPORT

In: onal Application No

-F... EP 03/12884

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 018, no. 525 (C-1257), 5 October 1994 (1994-10-05) -& JP 06 182208 A (IDEMITSU KOSAN CO LTD), 5 July 1994 (1994-07-05) abstract paragraph '0006! - paragraph '0012! paragraph '0013! - paragraph '0016! -----	5-23, 28-30, 40-42, 46-60,76
X	ABOUL-GHEIT AHMED KADRY: "ROLE OF ADDITIVES IN THE IMPREGNATION OF PLATINUM AND RUTHENIUM ON ALUMINA CATALYSTS" JOURNAL OF CHEMICAL TECHNOLOGY AND BIOTECHNOLOGY, vol. 29, no. 8, August 1979 (1979-08), pages 480-486, XP008028876 OXFORD, GB the whole document -----	1-4,9, 10, 19-27, 35-39, 46-60,76
X	US 4 073 750 A (YATES DAVID J C ET AL) 14 February 1978 (1978-02-14) the whole document -----	43-45,77
X	US 4 431 574 A (VASUDEVAN STRINIVASAN ET AL) 14 February 1984 (1984-02-14) claims 10,18-20 tables I,II -----	43-45
X	HARTMANN M ET AL: "Preparation and characterization of ruthenium clusters on mesoporous supports" MICROPOROUS AND MESOPOROUS MATERIALS, ELSEVIER SCIENCE PUBLISHING, NEW YORK, US, vol. 44-45, 6 April 2001 (2001-04-06), pages 385-394, XP004247170 ISSN: 1387-1811 the whole document -----	43-45
X	US 3 953 368 A (SINFELT JOHN H) 27 April 1976 (1976-04-27) example 2; tables II,III,VI -----	43-45
X	US 4 634 515 A (SWAN GEORGE A ET AL) 6 January 1987 (1987-01-06) the whole document -----	76,78
X	US 6 118 037 A (SANFILIPPO DOMENICO ET AL) 12 September 2000 (2000-09-12) the whole document -----	76,78

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 03/12884

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 61-75  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-42, 46-60, 76, 77 (in part)

Catalysts, methods for manufacture thereof, and process for production of C5+ liquid hydrocarbons therewith

2. Claims: 43-45, 77 (in part), 78 (in part)

Catalyst and processes using the catalyst

3. Claim : 78 (in part)

Method for the removal of sulfur

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 61-75

Present claims 1-78 relate to an extremely large number of possible catalysts, processes for the manufacture thereof and use thereof. Support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT is to be found, however, for only a very small proportion of the catalysts and processes claimed. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely those parts relating to the catalysts prepared in the examples and closely related homologous compounds, i.e. organic compounds as described in paragraphs '069! "amino alcohol" or '078! "amino acid".

Claims 61-75 have not been searched since the category of said claims is unclear (Article 6 PCT).

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/12884

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